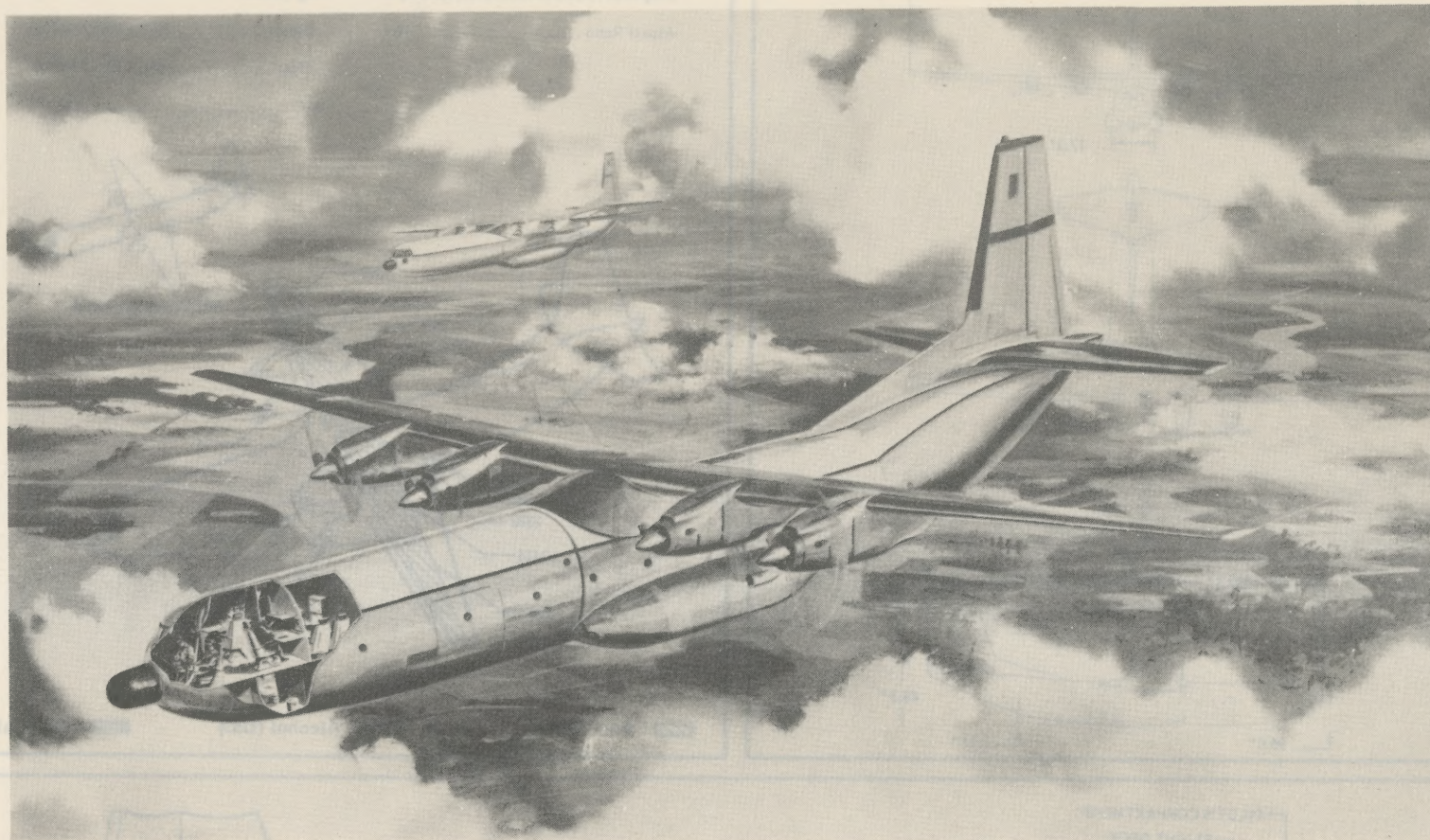


U N C L A S S I F I E D

SERVICE



## *Standard Aircraft Characteristics*

BY AUTHORITY OF  
THE SECRETARY  
OF THE AIR FORCE

# C-133 B

**CARGOMASTER**

**Douglas**

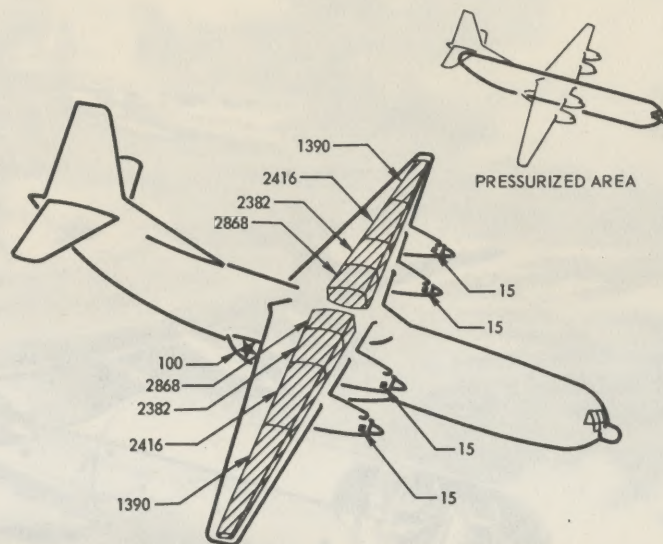
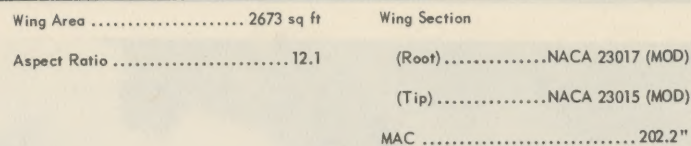
FOUR T34-P-9W

PRATT & WHITNEY

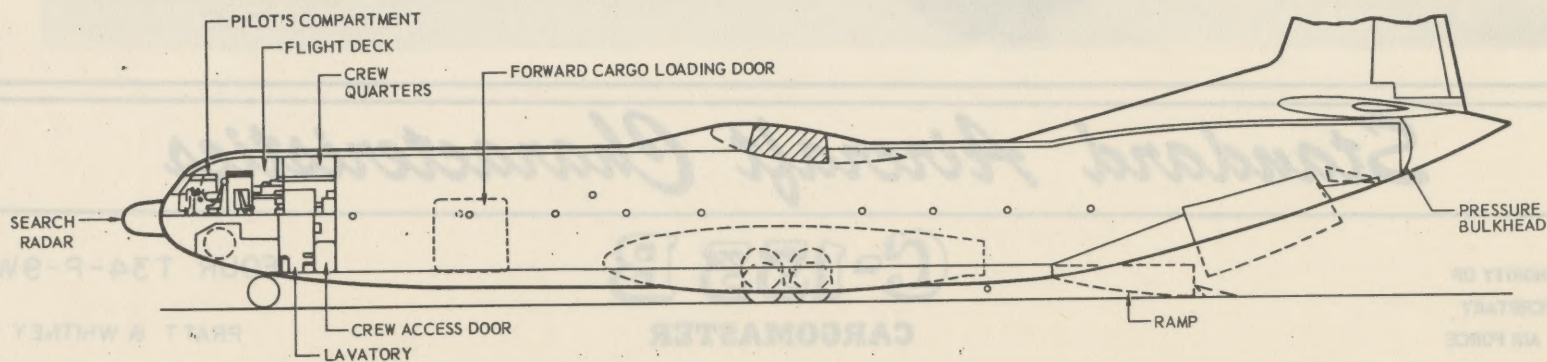
1 OCT 58

U N C L A S S I F I E D

C-133 B



Oil (Gal)



C-133 B

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1 OCT 58

**POWER PLANT**

Nr & Model . . . . . (4) T34-P-9W  
 Mfr . . . . . Pratt & Whitney  
 Engine Spec Nr P&W Rpt Nr MR-328  
 Type . . . . . Axial  
 Red. Gear Ratio . . . . . 0909  
 Prop Mfr . . . . . Curtiss  
 Blade Design Nr. . . . . 1060-25C5-12  
 Prop Type . . . Elec., F.F., Rev'r  
 Nr Blades . . . . . 3  
 Prop Dia . . . . . 18'0"  
 Augmentation . . . . Water/Alcohol

**ENGINE RATINGS**

S. L. Static ESHP-SHP-LB-RPM-MIN

T.O.: \*7500-6950-1375-11,000-2

T.O.: 6500-5950-1370-11,000-5

Mil: 6300-5750-1370-11,000-30

Nor: 5650-5150-1250-10,750-  
 Cont

\*Includes water injection

**DIMENSIONS**

Wing  
 Span (overall) . . . . . 179.7'  
 Incidence (root) . . . . . 8°  
 (tip) . . . . . 4°  
 Dihedral . . . . . 2°  
 Sweepback (LE) . . . . . 2°24'  
 Length . . . . . 157.5'  
 Height . . . . . 48.3'  
 Tread . . . . . 17.3'  
 Prop Grd Clearance . . . . . 96.0"  
 Fuselage Grd Clearance . . . . 16"

**Mission and Description**

Navy Equipment: None

Mfr's Model: 1430B

The principle mission of the C-133B is to serve as a long range logistics cargo carrier. In addition, the cargo envelope permits carrying large missiles including the Atlas, Thor, and Titan.

The C-133B has a high wing and truck bed height loading. An aft loading door with integral ramp and a forward side loading door are provided. The airplane is pressurized by air from the gas turbine power units. A thermal cyclic deicing system is installed in the wing leading edge, operating from air bled from the engines; pneumatic deicing is provided for the leading edges of the tail surfaces. A manually controlled hydraulic snubber system and an aerodynamic boost cable control system are provided. Partial span, double slotted flaps are incorporated.

The main landing gear is dual tandem with the forward wheels operating independently of the aft wheels. The fairings for the main gear also enclose two GTPU's and two refrigeration units.

Single point refueling and defueling is incorporated for the integral fuel tanks. Fuel dumping provisions are also incorporated.

The C-133B differs from the C-133A by the incorporation of Pratt and Whitney T34-P-9W engines and clam-shell type aft cargo loading doors.

**Development**

Design Initiated: . . . . . Mar 53  
 Mock-up: . . . . . Dec 53  
 First Flight (est): . . . . . Nov 59  
 First Acceptance (est): . . . . . Jan 60  
 In Production

**GENERAL****CLEARANCES**

Main Cabin:  
 Height (usable) . . . . . 13.3'  
 Height (under rear spar) . . 12.0'  
 Length (overall) . . . . . 97.3'  
 Width (floor level) . . . . . 11.8'  
 Rear Loading Door:  
 Height . . . . . 12.5'  
 Width . . . . . 12.2'  
 Height above grd . . . . . 4.2'  
 Side Loading Door:  
 Height . . . . . 8.3'  
 Width . . . . . 8.8'  
 Height above grd . . . . . 4.2'

**PERSONNEL**

Crew (normal) . . . . . 4  
 Pilot  
 Co-pilot  
 Systems Engineer  
 Navigator  
 Relief Crew (for long flights) . . 3

**CAPACITIES**

Main Cabin . . . . . 12,000 cu ft  
 Max single axle . . . . . 20,000 lb  
 Max dual axle . . . . . 44,000 lb  
 Max track . . . . . 76,000 lb  
 Loading Sheaves . . . . . 50,000 lb  
 Max Cargo . . . . . \*122,704 lb  
 Limit Floor Loads:  
 The main cargo floor total load is based on 300 psf.  
 Cargo Tiedown . . . . . See Diagram, Page 6

\*Limited by zero fuel weight

**MISCELLANEOUS**

Ramp Type:  
 Hydraulically operated, integral with rear loading door  
 Ramp Incline . . . . . 9°  
 Ramp Toe Incline . . . . . 15°

**WEIGHTS**

Loading	LB	L.F.
Empty . . . . .	120,363(E)	
Basic . . . . .	122,886(E)	
Design . . . . .	286,000	2.5
Combat . . . . .	*152,350	
Max T.O. (overload) **	300,000	2.32
Max T.O. (normal) . .	286,000	2.5
Max Land . . . . .	+284,760	

(E) Estimated.  
 \* For Basic Mission  
 \*\* Limited by gear strength  
 † Limited by 5 fps, lg. wing lift

**FUEL**

Location	Nr. Tanks	Gal
Wing, outbd. . . . .	4	7612
Wing, inbd . . . . .	4	10,500
	Total	*18,112

\*Usable fuel

Grade . . . . . JP-4  
 Specification . . . . . MIL-F-5624

**OIL**

Nacelle . . . . . 4 . . . . (tot) 60  
 Specification . . . . . MIL-L-7808  
 WATER/ALCOHOL  
 Gear Pod . . . . . 1 . . . . . 100  
 RH (Aft)

**ELECTRONICS**

VHF Communications, COLLINS-101  
 UHF Command . . . . . AN/ARC-34  
 Liaison(2) . . . . . 618S-1  
 Radio Compass . . . . . AN/ARN-6  
 Loran . . . . . AN/APN-70  
 VHF Nav. Receiver . . . . . AN/ARN-14  
 Glide Path . . . . . AN/ARN-31  
 Interphone . . . . . AN/AIC-10  
 Marker Beacon . . . . . AN/ARN-32  
 I.F.F. . . . . AN/APX-25  
 Search Radar . . . . . AN/APN-59  
 Emergency Keyer . . . . . AN/ARA-26  
 UHF Homing Adapter . . . . . AN/ARA-25  
 Radio Altimeter . . . . . SCR-718  
 TACAN . . . . . AN/ARN-21  
 Radar Altimeter . . . . . AN/APN-22

# Loading and Performance—Typical Mission

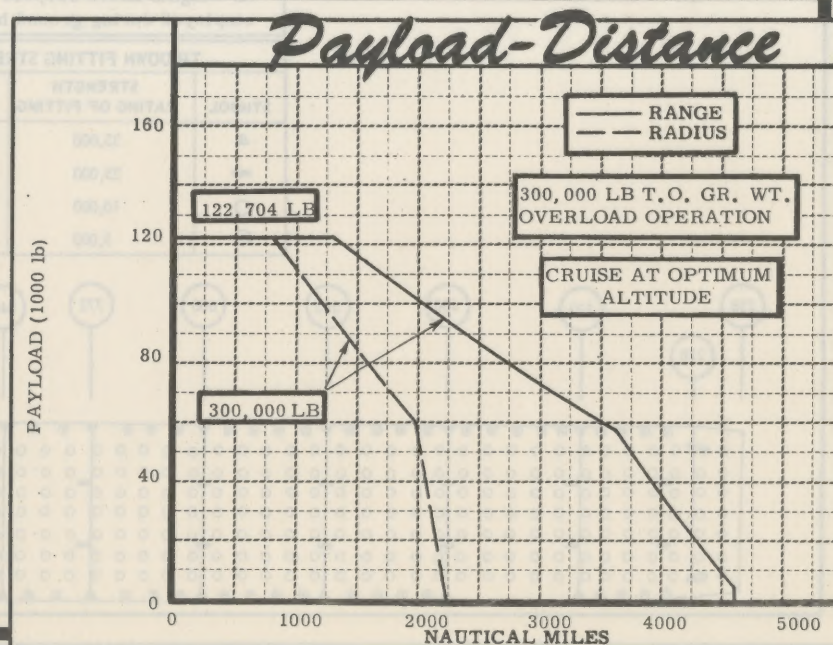
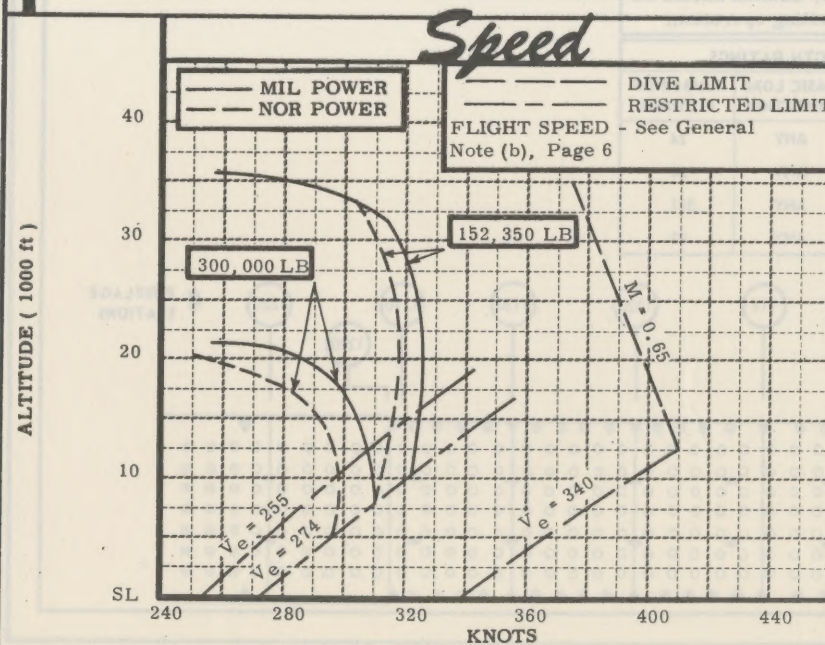
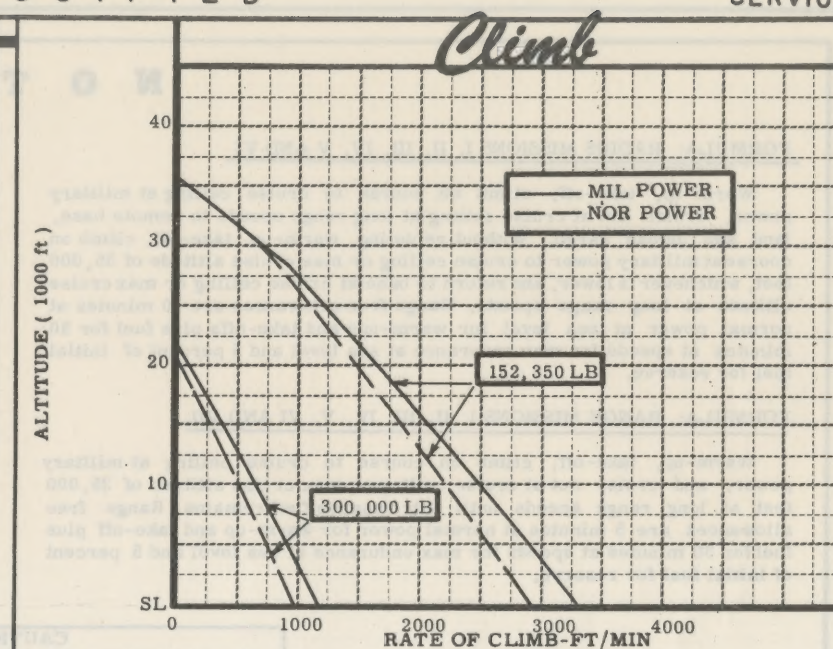
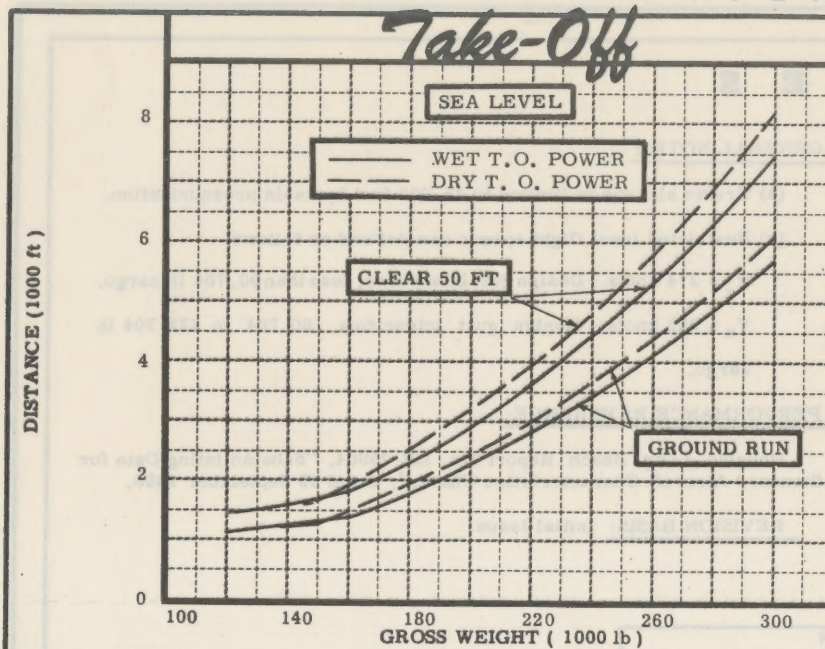
C O N D I T I O N S			BASIC MISSION	NORMAL	DESIGN	MAX FUEL	ALTERNATE MAX CARGO	DESIGN MAX CARGO	FERRY RANGE
			I	II	III	IV	V	VI	VII
TAKE-OFF WEIGHT		(lb)	300,000	277,550 <sup>⑦</sup>	286,000	300,000	286,000	286,000	245,724 <sup>⑧</sup>
Fuel at 6.5 lb/gal (grade JP-4)		(lb)	65,054	62,550	109,815	117,728	51,000	71,000	117,728
Payload (outbound)		(lb)	110,650	90,704	51,889	57,976	110,704	90,704	None
Wing loading		(lb/ft <sup>2</sup> )	112.2	103.8	107.0	112.2	107.0	107.0	91.9
Stall speed (power off)		(kn)	110	105	107	110	107	107	99
Take-off ground run at SL	①	(ft)	5650/6050	4740/5050	5065/5410	5650/6050	5065/5410	5065/5410	3620/3800
Take-off to clear 50 ft	①	(ft)	7465/8130	6180/6710	6640/7215	7465/8130	6640/7215	6640/7215	4640/4980
Rate of climb at SL	②	(fpm)	1175	1360	1280	1175	1280	1280	1690
Rate of climb at SL (one engine out)	②	(fpm)	560	710	650	560	650	650	970
Time: SL to 10,000 ft	②	(min)	11.0	9.2	9.8	11.0	9.8	9.8	7.1
Time: SL to cruise ceiling	②	(min)	21.6	23.4	22.8	21.6	22.8	22.8	25.0
Service ceiling	②	(ft)	19,800	22,250	21,300	19,800	21,300	21,300	25,750
Service ceiling (one engine out)	②	(ft)	10,700	13,550	12,500	10,700	12,500	12,500	17,800
COMBAT RANGE	③	(n. mi)	1659	1733	3500	3609	1293	1998	4610
Average cruising speed		(kn)	285	285	285	285	285	285	284
Initial cruising altitude		(ft)	15,500	18,250	17,200	15,500	17,200	17,200	22,250
Final cruising altitude		(ft)	21,850	24,550	29,650	28,700	21,900	24,500	34,450
Total mission time		(hr)	5.9	6.2	12.4	12.7	4.6	7.1	16.3
COMBAT RADIUS	③	(n. mi)	1000	1000	1913	1995	760	1145	—
Average cruising speed		(kn)	282	282	283	283	282	282	—
Initial cruising altitude		(ft)	15,500	18,250	17,200	15,500	17,200	17,200	—
Final cruising altitude		(ft)	35,000	35,000	34,800	34,750	35,000	34,950	—
Total mission time		(hr)	7.3	7.3	13.7	14.3	5.6	8.3	—
FIRST LANDING WEIGHT	④	(lb)	263,000	243,000	225,000	233,350	258,100	246,400	—
Ground roll at SL/with auxiliary brake <sup>⑤</sup> / <sup>⑥</sup>		(ft)	4325/2410	4020/2220	3725/2040	3855/2120	4250/2360	4060/2250	—
Total from 50 ft/with auxiliary brake <sup>⑤</sup> / <sup>⑥</sup>		(ft)	6030/4145	5625/3850	5250/3600	5415/3710	5930/4070	5690/3900	—
COMBAT WEIGHT	④	(lb)	152,350	152,296	173,111	175,374	147,396	155,696	137,357
Combat altitude		(ft)	33,050	33,070	31,100	30,900	33,500	32,750	34,450
Combat speed	②	(kn)	301	301	305	305	301	302	298
Combat climb	②	(fpm)	271	271	270	272	280	273	290
Combat ceiling (500 fpm)	②	(ft)	31,450	31,470	29,350	29,100	32,000	31,150	33,050
Service ceiling (100 fpm)	②	(ft)	34,600	34,620	32,850	32,650	35,000	34,350	35,000
Service ceiling (one engine out)	②	(ft)	30,500	30,520	27,950	27,600	31,050	30,150	32,250
Take-off ground run at SL	①	(ft)	1350/1340	1350/1340	1675/1760	1720/1810	1310/1260	1370/1400	—
Take-off to clear 50 ft	①	(ft)	1720/1730	1720/1730	2170/2280	2220/2350	1670/1650	1755/1810	—
Rate of climb at SL	②	(fpm)	3270	3275	2800	2760	3400	3190	3675
Max speed at optimum altitude	②	(kn)	326	326	324	324	326	326	327
Optimum altitude	②	(ft)	19,310	19,280	17,950	17,800	19,630	19,110	20,280
Basic speed at 25,000 ft	②	(kn)	324	324	320	320	324	323	326
LANDING WEIGHT	④	(lb)	130,969	130,844	133,226	133,632	130,266	131,266	137,357
Ground roll at SL/with auxiliary brake <sup>⑤</sup> / <sup>⑥</sup>		(ft)	2220/1110	2215/1110	2250/1140	2260/1145	2200/1105	2225/1115	2320/1175
Total from 50 ft/with auxiliary brake <sup>⑤</sup> / <sup>⑥</sup>		(ft)	3310/2225	3300/2225	3350/2265	3360/2260	3295/2220	3315/2230	3440/2320

- N O T E S**
- ① Take-off power (wet/dry)
  - ② Military power
  - ③ Detailed description of Radius and Range Mission are given on page 6
  - ④ For Radius Mission if radius is shown

- ⑤ Brakes only
- ⑥ Brakes plus four engines reverse thrust
- ⑦ Normal take-off G. W. limited to 277,550 lb by zero fuel weight

- ⑧ Includes 720 lb for relief crew and 2980 lb for ballast

**PERFORMANCE BASIS:**  
 (a) Data source: Estimated data, based on flight test drag level.  
 (b) Performance based on powers shown on page 3.



## N O T E S

FORMULA: RADIUS MISSIONS I, II, III, IV, V AND VI

Warm-up, take-off, climb on course to cruise ceiling at military power, cruise out at cruise ceiling at long range speeds to remote base, land and unload cargo. Without refueling, warm-up, take-off, climb on course at military power to cruise ceiling or max cruise altitude of 35,000 feet, whichever is lower, and return to base at cruise ceiling or max cruise altitude at long range speeds. Range free allowances are 10 minutes at normal power at sea level for warm-ups and take-offs plus fuel for 30 minutes at speeds for max endurance at sea level and 5 percent of initial fuel for reserve.

FORMULA: RANGE MISSIONS I, II, III, IV, V, VI AND VII

Warm-up, take-off, climb on course to cruise ceiling at military power, and cruise out at cruise ceiling or max cruise altitude of 35,000 feet at long range speeds until only reserve fuel remains. Range free allowances are 5 minutes at normal power for warm-up and take-off plus fuel for 30 minutes at speeds for max endurance at sea level and 5 percent of initial fuel for reserve.

GENERAL NOTES:

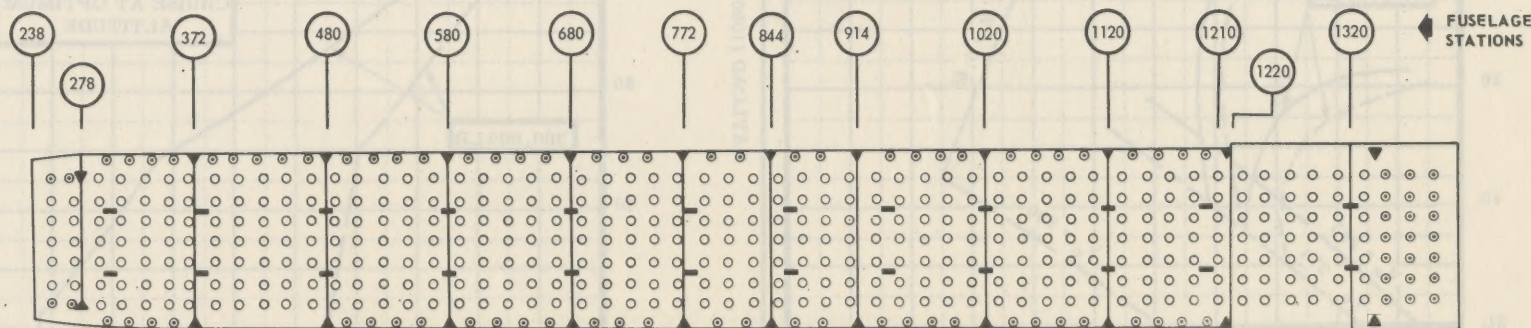
- (a) Cruise altitude is limited to 35,000 feet by cabin pressurization.
- (b) Restricted level flight speeds are defined as follows:
- $V_e = 274$  knots - Design gust intensities, less than 90,704 lb cargo.
- $V_e = 255$  knots - Design gust intensities, 90,704 to 122,704 lb cargo.

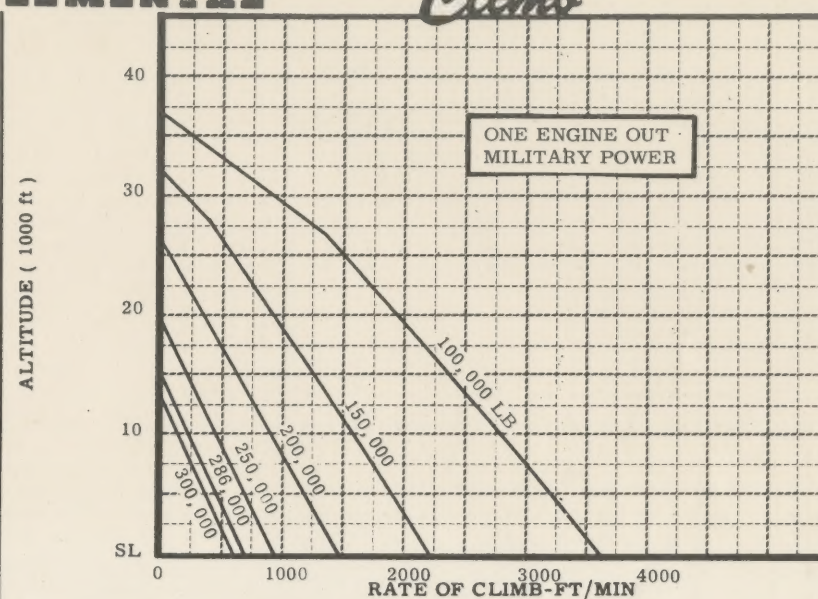
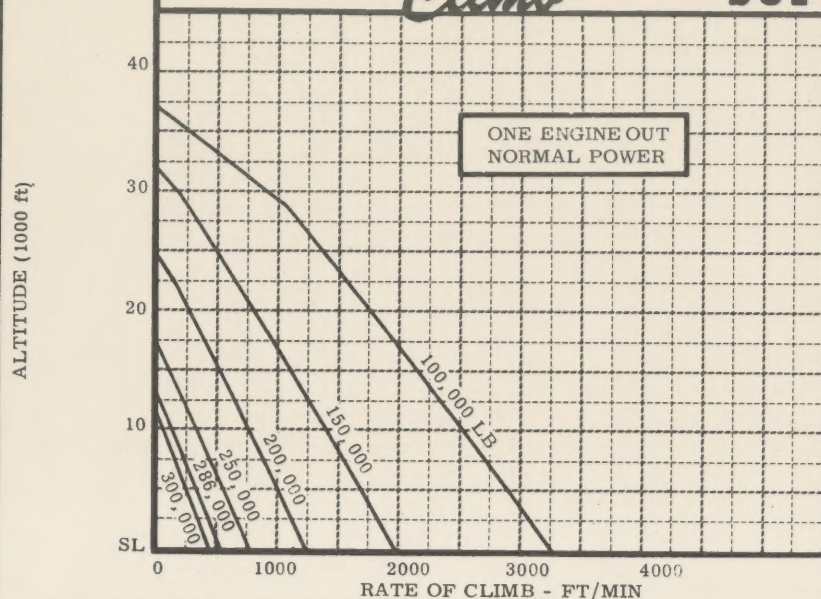
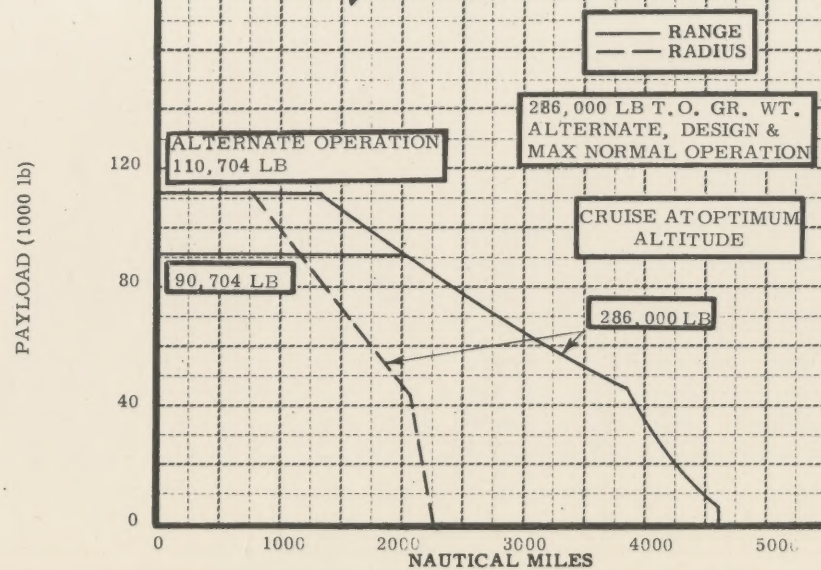
PERFORMANCE REFERENCE:

Douglas Long Beach Report Nr. LB-25904, "Substantiating Data for Standard Aircraft Characteristics Charts", dated 15 September 1958.

REVISION BASIS: Initial Issue

CAUTION			
At weights above 286,000 lb, caution should be employed during ground handling operation.			
TIEDOWN FITTING STRENGTH RATINGS			
SYMBOL	STRENGTH RATING OF FITTING	BASIC LOAD DIRECTION	NUMBER OF FITTINGS
▲	35,000	ANY	24
—	25,000	ANY	24
○	10,000	ANY	381
⊙	5,000	ANY	92



*Climb***SUPPLEMENTAL***Climb**Payload-Distance*

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